Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Cancel claims 1-40.

41. (New) An oil sensor module for use with attenuated total internal reflection (ATIR) apparatus for optically determining the condition of oil, the sensor module comprising:

an evanescent wave sensor for sensing the oil;

a fluid permeable module housing for said sensor; and

an optical connector for connecting said sensor to said ATIR apparatus.

42. (New) A sensor module as claimed in claim 41 wherein said evanescent wave sensor comprises an optical fibre configured to allow interaction of an evanescent wave of light guided within the fibre with said oil.

43. (New) A sensor module as claimed in claim 42 wherein said fibre includes a tapered portion defining said evanescent wave sensor.

44. (New) A sensor module as claimed in claim 42 wherein said optical connector comprises a portion of said optical fibre of said evanescent wave sensor.

45. (New) A sensor module as claimed in claim 44 further comprising a mirror at a sensor end of said optical fibre.

46. (New) A sensor module as claimed in claim 44 further comprising a mirror at a connector end of said optical fibre.

47. (New) A sensor module as claimed in claim 46 wherein a said mirror comprises a coating on an end of said optical fibre.

48. (New) A sensor module as claimed in claim 41 wherein said determined condition of said oil comprises a degree of degradation of the oil.

49. (New) A sensor module as claimed in claim 48 wherein said module housing comprises a ferrule for each end of said sensor and one or more spacers between said ferrules.

50. (New) A sensor module as claimed in claim 41 wherein said housing is fabricated from ceramic.

51. (New) A sensor module as claimed in claim 41 in the form of a dipstick.

52. (New) Apparatus for optically determining the condition of oil using ATIR, the apparatus including the sensor module of claim 41.

53. (New) Apparatus for optically determining the condition of a fluid, the apparatus comprising:

a light source to provide light for interacting with said fluid;

a detector for detecting a level of light from said light source; and

an optical path between said light source and said detector, said optical path including a reflection from an evanescent wave interface; and

wherein said apparatus is configured such that said fluid may be brought sufficiently close to said interface for an evanescent wave formed by total internal reflection of light at said interface to interact with said fluid;

whereby a condition of said fluid is determinable from said detected light level.

54. (New) Apparatus as claimed in claim 53 for attenuated total internal reflection (TIR) sensing, and wherein said evanescent wave interface comprises a substantially totally internally reflecting (TIR) interface.

55. (New) Apparatus as claimed in claim 53 wherein said optical path further includes at least one mirror between said light source and said detector such that said optical path includes two reflections from said interface.

56. (New) Apparatus as claimed in claim 55 wherein said optical path comprises a fibre optic, and wherein said interface comprises a tapered region of said fibre optic.

57. (New) Apparatus as claimed in claim 55 wherein said fibre optic is provided with a protective housing.

58. (New) Apparatus as claimed in claim 55 comprising a dipstick for sampling said fluid, said dipstick containing said fibre optic.

59. (New) Apparatus as claimed in claim 55 wherein said fluid comprises a lubricant or has an absorbance of greater than unity at a wavelength of said light.

60. (New) Apparatus as claimed in claim 55 wherein said interaction between said evanescent wave and said fluid comprises absorption of light by said fluid.

61. (New) Apparatus as claimed in claim 55 wherein said interaction between said evanescent wave and said fluid includes coupling or propagation of light into said fluid.

62. (New) Apparatus as claimed in claim 55 further comprising a signal processor coupled to said detector and configured to detect a change in said light level to detect a change in the condition of said fluid.

63. (New) Apparatus as claimed in claim 62 wherein said signal processor is configured to detect a degradation in the condition of said fluid.

64. (New) Apparatus as claimed in claim 55 configured to provide and detect light of at least two different wavelengths.

65. (New) Apparatus as claimed in claims 55 configured to determine a degree of light scatter by said fluid.

66. (New) Apparatus as claimed in claim 65 configured to provide and detect light of at least two different wavelengths and to compare detected light levels at said at least two different wavelengths to distinguish a change in detected light level caused by a change in temperature of said fluid from a change in detected light level caused by a change in light scatter of said fluid.

67. (New) A method of optically determining the condition of oil using attenuated internal reflection, the method comprising:

measuring an attenuation of an internal reflection at an interface due to an interaction of light with said oil mediated by an evanescent wave formed at said interface; and

determining a condition of said oil from said attenuation.

68. (New) A method as claimed in claim 67 wherein said oil has an absorbance of greater than unity at a wavelength of said light.

69. (New) A method as claimed in claim 67 further comprising adjusting an extension of said evanescent wave from said interface into said oil to adjust a degree of interaction between said evanescent wave and said oil.

70. (New) A method as claimed in claim 67 wherein said interaction comprises absorption of said light by said oil.

71. (New) A method as claimed in claim 67 wherein said interaction includes coupling or propagation of said light to said oil.

72. (New) A method as claimed in claim 67 comprising measuring said attenuation at two or more wavelengths to determine a degradation of said oil.

73. (New) A method as claimed in claim 72 comprising using said measured attenuation at two or more wavelengths for distinguishing between attenuation caused by a change in temperature from attenuation caused by a change in scatter.

74. (New) A method of determining a degree of degradation of a lubricant, the method comprising measuring a level of particulate scattering by said lubricant; and determining said degree of degradation of the lubricant from said level of particulate scattering.

75. (New) A method as claimed in claim 74 wherein said measuring comprises making a measurement responsive to a complex refractive index value of the lubricant.

76. (New) A method as claimed in claim 74 comprising measuring said level of particulate scatting using two or more wavelengths or colours to distinguish a change in particulate scattering from a temperature change.

77. (New) Optical lubricant sensing apparatus, the apparatus comprising, an illumination source to source illumination at an operating wavelength of the apparatus, and a tapered fibre optic configured to couple light at said operating wavelength out of said taper and into said lubricant, whereby a real of complex refractive index of said lubricant may be determined.

78. (New) An optical sensor module for use with evanescent field sensing apparatus for optically determining the condition of oil, the sensor module comprising:

an evanescent wave sensor;

a module housing for said sensor; and

an optical connector for connecting said sensor to said evanescent field sensing apparatus.